3 (Original).   A method as claimed in claim 2, wherein the step (a) comprises the steps of:

(al)   receiving 3D object data representing a raw stock; and

(a2)   transforming the 3D object data to produce a transformed

3D object dataset including a plurality of regular volumes each containing a reference to at

least one surface of the raw stock.

4 (Original).   A method as claimed in claim 3, wherein the transforming step (a2)

comprises segmenting the object into a plurality of substantially equally sized regular three-

dimensional volumes such that the or each surface of the object falls within the total volume

defined by the plurality of regular volumes.

5 (Original).   A method as claimed in claim 4, wherein each regular volume contains a

stock object pointer referring to a plane equation describing the surface of the original raw

stock falling within that regular volume.

6 (Original).   A method as claimed in claim I, wherein the step (b) comprises:

(bl) determining a swept volume for the tool movement in a co-ordinate space

common to both the swept volume and the plurality of regular volumes.

7(Original).   A method as claimed in claim 6, wherein the step (b) comprises:

(b2)   determining a subset of the plurality of regular volumes wholly

or partially within the swept volume 25 of that tool movement.

8 (Original).   A method as claimed in claim 7, wherein the step (b2) comprises:

(b21) determining those regular volumes of the subset which are wholly within the swept volume; and

(b22) determining those regular volumes of the subset which are partially within the swept volume and thereby coincident with a surface of the swept volume.

9 (Original).   A method as claimed in claim 8, wherein the step(c) comprises attaching a tool movement pointer to each of said subset of regular volumes, the tool movement pointer referring to the tool movement.

10 (Original).   A method as claimed in claim 9, wherein the tool movement pointer refers to a surface of the swept volume of the tool movement coincident with that regular volume.

11 (Original).   A method as claimed in claim 10, wherein the tool movement pointer refers to a plane equation representing the surface of the swept volume of the tool movement.

12 (Original).   A method as claimed in claim 7, wherein the step (b) comprises:

(b3) creating one or more new regular volumes representing a portion of the swept volume not coincident with at least one of the plurality of regular volumes, and adding the new regular volumes to the plurality of regular volumes.

13 (Original).   A method as claimed in claim 1, comprising the step:

(e) displaying a 3D object comprising the plurality of regular volumes on a human visible display.

14 (Original).   A method as claimed in claim 1, comprising the step:

(f)   for each of selected regular volumes from the plurality of regular volumes, determining a fully realized finished surface by combining the surface of the raw stock contained within that regular volume with the or each tool movement referred to by the tool movement pointer applied to that regular volume.

15 (Original).   A method as claimed in claim 14, wherein the step (f) results in a fully realized surface geometry representation with full boundary information as a final 3D object dataset.

16 (Original).   A method as claimed in claim 15, wherein the step (f) comprises displaying the final 3D object dataset on a human visible display.

17 (Original).   A method as claimed in claim 1, wherein the plurality of regular volumes form a list, each regular volume comprising a position field, a surface pointer field, a next type field and a next regular volume pointer.

18 (Original).   A method as claimed in claim 17, wherein the surface pointer field of each regular volume comprises an original stock surface pointer or one or more tool surface pointers.

19 (Newly Added).   The method as claimed in claim 1, wherein step (a) comprises

transforming an input 3D object data representing a raw stock to produce a transformed 3D

object dataset, including the steps of:

1) applying an XYZ grid at a predetermined orientation with respect to the stock object;

2) for an XY cell of said XYZ grid, determining a surface boundary of the stock object

in the Z direction; and

3) determining regular grid values in the Z direction to give a parallelepiped volume

having maximum and minimum Z values containing the surface boundary of the stock object.

20 (Newly Added).   The method as claimed in claim 19 further comprising the step of

determining a next type identifier with reference to a surface orientation of the surface boundary.

21 (Newly Added).   The method as claimed in claim 20, wherein the next type identifier is

selected to represent either solid or void.

22 (Newly Amended).   The method as claimed in claim 20, wherein the next type identifier

is selected to be one amongst adjacent, solid or void.

23 (Newly Added).   A machining simulation apparatus having a processor and a memory arranged to perform to perform the steps of:

(a)   determining a plurality of regular volumes containing surfaces of an object representing a raw stock;

(b)   determining a subset of said plurality of regular volumes coincident with a swept volume representing a tool movement; and

(c)   applying a pointer to each said regular volume of said subset, said pointer referring to said tool movement.

24 (Newly Added).   A computer readable recording medium having recorded thereon computer implementable instructions for performing the steps of:

(a)   determining a plurality of regular volumes containing surfaces of an object representing a raw stock;

(b)   determining a subset of said plurality of regular volumes coincident with a swept volume representing a tool movement; and

(c)   applying a pointer to each said regular volume of said subset, said pointer referring to said tool movement.